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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,620	07/26/2004	Ravishankar S. AYYAGARI	TI-36919	4619

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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

JEAN PIERRE, PEGUY

ART UNIT PAPER NUMBER

2819

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

8m

Office Action Summary	Application No.	Applicant(s)	
	10/710,620	Ayyagari et al.	
	Examiner	Art Unit	
	Peguy JeanPierre	2819	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/26/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-17, 31-44 and 47-49 is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 18-23, 27-30, 45, 46, 50 and 51 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 24-26 and 52-54 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 19-30 are objected to because of the following informalities: Claim 19 does not end with a period. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5, 8, 18-23, 27-30, 45-46, and 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Troemel, JR (US 2002/0163981) in view of the Admitted Prior Art (APA) and Sato (US 2004/0032628).

Troemel discloses in Figure 6 a sampling circuit that comprises a first circuit (605) that can be implemented as a low pass filter or band pass filter that effectively limits the bandwidth of the input signal (see paragraph 60) by removing signals which are outside or above the desired band and a second circuit, using separate set of components, that can be implemented as a switched capacitor circuit that samples the output signal generated by the first circuit.

Troemel fails to teach an input signal that contains both a source signal and noise signal. Figure 3 of the APA discloses a sampling circuit, that is a first circuit portion, that receives an input signal that includes both a source signal and a noise signal on path 311 and provides a bandwidth limiting to the input signal (see paragraph 32). Due to the

bandwidth limiting the noise signal components are removed (substantially absent) from the input signal.

Troemel does not also teach a low pass filter that comprises a resistor and a first capacitor coupled between a first node and a second node and to the resistor, a switch coupled between a second node and a common mode voltage, a second switch connected across the first capacitor. Figure 3 of the APA further discloses a low pass filter that comprises a resistor (310) and a capacitor (320), the resistor (310) receives the source signal (311) on a first terminal, the second terminal is connected to a first node, and the capacitor is coupled to a first node and a second node; a switch (340) is connected between the second node and a common mode voltage, a second switch (350) is connected across the capacitor.

The APA is designed to reduce high frequency noise components in the sampling circuit. Therefore, it would have been obvious to one having ordinary skill in the art to modify the system of Troemel by coupling before the switched capacitor circuit (second portion) the sampling circuit (noise and source) as taught by the APA to effectively eliminate signals outside the desired band and consequently perform tuning and down conversion of the signal.

Troemel does not teach a device that comprises an image sensor and an analog front-end that processes electrical signal and comprises a sampling circuit; a PGA coupled to an analog to digital converter; a memory. Sato discloses in Figure 11, a device that comprises an image sensor (10) that corresponds to an amount of incident light and comprises a plurality of pixels (see paragraphs 17, 63). The sensor is coupled to an

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analog front-end circuit that comprises a sampling circuit (41) that samples the image signal. The device of Sato further discloses a PGA unit (43) coupled to a converter (45) the output of the converter is inputted into a memory unit (63) to process and store the digital values. The sampling circuits are provided to eliminate components that may cause noises and errors from image signal. Therefore, it would have been obvious to one having ordinary skill in the art presented with the teaching of Sato et al. would have been motivated to have applied an image signal to the sampling circuit of Troemel for the benefit of improving image quality by removing high frequency noise signals.

Allowable Subject Matter

4. Claims 9-17 and 31-44 and 47-49 are allowed.
5. Claims 6-7, 24-26, 52-54 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach a sampling circuit that comprises a first circuit path that contains a source and a noise signal, a second path that samples high frequency components of the input signal and circuit that generates a samples output signal by taking the difference between the two paths.


Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sharpe (USP 4,560,963), Senderowicz (USP 4,633,425), Stec

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(USP 4,581,765), Singer et al. (USP 5,909,131) disclose switched capacitor sampling circuit.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peguy JeanPierre whose telephone number is (571) 272-1803. The examiner fax phone number is (571) 273-1803.


Peguy JeanPierre
Primary Examiner